

Section 6 Background Summary and Predictive Model

6.1 Kalihi and Kapālama

Based on background research and settlement pattern analysis, the primary area of traditional Hawaiian settlement and intensive agriculture within Kalihi and Kapālama seems to have been in the coastal plains and lower valleys, as well as pockets within upper Kalihi Valley. Seaward areas also contain evidence of burial practices, fishpond aquaculture, habitation, and limited agriculture. In the beginning of the 20th century, the low-lying taro lands and fishponds were filled to provide new land for railroad infrastructure, industrial parks, and housing subdivisions. Kalihi and Kapālama became early suburbs of the urban center at Honolulu. This land “reclamation” and subsequent urban development would have destroyed and/or buried any surface archaeological cultural resources that may have been present. However, historic documentation (LCAs and maps) and previous archaeological finds suggest it is possible that pre- and post-contact subsurface cultural deposits associated with habitation, aquaculture, and burials are present beneath historic and modern fill layers.

Many LCAs are either within or in the immediate vicinity of the Kalihi-Kapālama portion of the study area (see Figure 17, Table 2, and Figure 21). Traditional Hawaiian land use indicated in the LCA documentation consisted of habitation, irrigated taro fields (*lo‘i*), *kula* (dry land plots used for cultivation and/or pasture), and aquaculture via fishponds. Kuleana land claims are clustered in the vicinity of Kalihi and Niuhelewai Streams. Of note is that the locations of both the Middle Street Transit Center and Kapālama Station are bisected by these streams—the Middle Street Transit Center by Kalihi Stream and the Kapālama Station by Niuhelewai Stream. Niuhelewai Stream is of particular interest as it is mentioned as the site where the Maui Chief Kahekili defeated Kahahana of O‘ahu (Alexander 1891:123); and is noted as being “choked up with the corpses of the slain” (Alexander 1891:123).

Commercial development in coastal Kalihi and Kapālama primarily occurred prior to the late 1970s when archaeological investigation became standard during construction activities. As a result, few archaeological studies have been conducted in this area. However, three archaeological investigations have been conducted in the vicinity of the study area (Dega & Davis 2005; Folk et al. 1993; and Hammatt & Shideler 2002), two in the vicinity of the proposed Middle Street Transit Center (see Figure 79 and Table 7). Documented archaeological cultural resources in the general vicinity of the Kalihi-Kapālama portion of the study area have included a post-contact subsurface refuse pit (SIHP # 50-80-14-6683) (Dega & Davis 2005); a post-contact cultural layer containing marine shell midden, charcoal, and three human burials (SIHP # 50-80-14-4525) (Folk et al. 1993); an *in situ* flexed most likely Hawaiian burial (SIHP #50-80-14-5581) of post-contact origin (pre-WWI) (Moore & Kennedy 1999); and the fragmentary remains of what appear to be five post-contact individuals (Dunn et al. 1991).

Based on a review of historic documentation and previous archaeological research, anticipated cultural resources within the Kalihi-Kapālama portion of the study area could include both pre- and post-contact subsurface cultural deposits, including human burials, artifact and midden deposits, trash pits, privies, buried structural foundations, fishpond sediments, and agricultural sediments (i.e., *lo‘i*).

6.2 Downtown Honolulu

Background research and settlement pattern analysis of Nu‘uanu and Pauoa Ahupua‘a indicates that the area of Downtown Honolulu was intensively used by pre-contact and early post-contact Hawaiians for agriculture, aquaculture, and habitation. Agriculture and habitation continued up through the wide lower area of Nu‘uanu Valley, as well as into several smaller side valleys, and significantly back into the narrow Pauoa Valley. Previous archaeological investigations have identified numerous pre-contact subsurface cultural deposits in the Downtown Honolulu portion of the study area, providing further evidence of the extensive traditional Hawaiian activity in this area.

Historic accounts by Don Francisco Marin, an early historic settler, indicate that by 1810 a village of several hundred native dwellings surrounded the grass houses of Kamehameha on Pākākā Point near the foot of what is now Fort Street (Gast and Conrad 1973). Marin’s account reflects the integration of traditional Hawaiians and Westerners during this period. Around half of the LCAs identified within this portion of the archaeological study area were awarded to foreigners, which emphasizes the cosmopolitan nature of this area.

During the second half of the 19th century, the waterfront of Honolulu changed significantly. At the peak of the whaling industry, around 1850, the Honolulu Harbor area became crowded with trading and whaling vessels, and required additional wharfs to accompany them. Between 1857 and 1870, 22 acres of reef land between Fort and Alakea Streets were filled with material dredged from the harbor. The urban development of the Downtown waterfront and surrounding areas in the 19th and 20th centuries involved extensive filling associated with the development of harbor infrastructure, industrial subdivisions, and commercial districts. [Note: these old, “pre-reclamation,” shorelines of Iwilei, Honolulu, and Kaka‘ako are depicted in relation to the current archaeological study area in the figures of the Settlement Pattern Analysis Section, above, and the Sampling Strategy Section, below.] These land reclamations and subsequent urban development would have destroyed and/or buried any surface archaeological cultural resources that may have been present within this area. However, historic documentation (LCAs and maps) and previous archaeological finds suggest that archaeological resources in the form of subsurface cultural deposits are present beneath historic and modern fill layers.

A number of LCAs are either within or in the immediate vicinity of the Downtown Honolulu portion of the study area (see Figure 31 and Table 4). The only break in the LCA distribution in this area is between the proposed Iwilei and Chinatown Stations, which was the former location of Kuwili and Kawa fishponds, thus emphasizing the population density within this portion of the study area. LCA documents indicate that LCAs in the Downtown Honolulu area were awarded to a variety of Native Hawaiians and foreign settlers who had moved into Honolulu as the city developed. All of the LCAs in the vicinity of the study area were small awards consisting of house lots and/or *lo‘i* (see Figure 31 and Table 4).

Previous archaeological research has confirmed the findings of historic research through the identification of numerous subsurface cultural deposits along the Downtown Honolulu waterfront. These cultural deposits provide continued evidence of both pre- and post-contact land use in the form of human burials, traditional Hawaiian artifacts, historic refuse, midden, historic building foundations, fishponds, and agricultural (i.e., *lo‘i*) sediments.

Based on a review of historic documentation and previous archaeological research, anticipated cultural resources within the Downtown Honolulu portion of the study area could include both pre- and post-contact subsurface cultural deposits. Pre-contact subsurface deposits could include human burials, fishpond sediments, alignments and/or walls associated with habitation or cultivation, and buried living and work surfaces containing midden, artifacts, and hearth features. Post-contact subsurface deposits could include human burials, trash pits, privies, building foundations, and Honolulu Rapid Transit & Land Ltd. streetcar infrastructure.

6.3 Kaka'ako

From pre-contact times into the early 1900s, Kaka'ako was considered separate from the two main population centers of the region, Honolulu and Waikīkī. It was sparsely populated and characterized by a dry plain dotted with fishponds and salt pans. An 1883 map of the Honolulu Water Works System indicates that large portions of the Kaka'ako portion of the study area were within areas formerly characterized by inland ponds and salt pans (see Figure 50). Makiki Ahupua'a, of which the present-day district of Kaka'ako formed the coastal portion, contained few areas of concentrated agriculture and development, located primarily within the lower reaches of its shallow valleys and narrowly along Makiki Stream.

LCA testimony in the mid-19th century indicates that much of Kaka'ako lands were awarded to the *ali'i*, high ranking retainers as fort lands to support soldiers in Honolulu; to the American Board of Commissioners for Foreign Missions for salt making lands; and to *maka'āinana* who claimed small house lots adjacent to fish or salt ponds. A review of historic maps of Kaka'ako indicate a number of LCAs in the vicinity of the study area (see Figure 46 and Table 5). Most of these LCAs were awards containing house lots, *lo'i*, and ponds (used for salt procurement or aquaculture).

Background research has indicated that in the early 1900s, Kaka'ako was used as a place for cemeteries and quarantine of medical patients, then became an area for dumping sewage and burning garbage, and finally was used as housing or for commercial purposes.

Previous archaeological research within Kaka'ako has been extensive due to modern redevelopment of the area. As a result, approximately 40 percent of the Kaka'ako portion of the study area has already been subjected to archaeological study (see Figure 81, Figure 82, and Table 9). Previous archaeology has shown that much of the sediments in the area consist of fill layers, which sometime extend down to the water table. However, naturally deposited sediments (i.e., Jaucas sands, as well as marine and alluvial clays) have been observed intact below the fill layers. Of note is the presence of buried sand dunes or berms, which, based on previous archaeological research, are the preferred location for burial, especially for Native Hawaiians.

Archaeological cultural resources identified within or in the immediate vicinity of the Kaka'ako portion of the study area consist of subsurface cultural layers containing evidence of both pre- and post-contact land use. Of note is the large number of human burials in this area, including traditional Hawaiian burials of pre- and early post-contact origin, historic cemeteries using western burial practices (i.e., extended burial position with coffin), and mass burials associated with smallpox epidemics.

Based on a review of historic documentation and previous archaeological research, anticipated cultural resources within the Kaka'ako portion of the study area could include both pre- and post-contact subsurface cultural deposits. Pre-contact subsurface deposits could include human burials; fishpond sediments; alignments and/or walls associated with fishponds and salt procurement; and buried living surfaces containing midden, artifacts, and hearth features. Post-contact subsurface deposits could include human burials, trash pits, privies, incinerated burn layers, and building foundations.

6.4 Predictive Model for Human Skeletal Remains

Concerns over the possibility of encountering burials (*iwi kūpuna*) merited further effort to summarize prior burial finds. Table 10 summarizes the available data.

No human skeletal remains have been reported in close proximity (200 m to either side) of the project alignment west of Nuʻuanu Stream. This condition changes almost immediately upon crossing to the east of the stream with the burial find reported in Landrum and Dixon (1992). Several burial finds have been reported in seaward downtown (Goodwin 1995), but it may be the case that the study corridor is so far seaward (often on fill lands that appear to have been ocean shallows into the late 1800s) as to be largely or completely seaward of the downtown burials.

The vicinity of the study corridor extending east from Punchbowl Street to Piʻikoi Street has, by far, the highest density of burials along the entire study corridor.

Only one human bone fragment has been reported from east of Piʻikoi Street near the project alignment (Smith 1989), but there was a find at Piʻikoi Street and Kapiʻolani Boulevard, and the Walmart cemetery was not much farther *mauka*. Thus, this stretch of the study corridor is also an area of heightened concern.

The shallow depth of burial finds is notable. While the Landrum and Dixon (1992) burial find was at a depth close to 2.5 m, the vast majority of burial finds have been at a depth of around 1 m below present ground surface.

Table 10. Previously Reported Discoveries of Human Skeletal Remains near the City Center Project Area (from west to east)

General Location	Reference	Site #	Depth	Nature of Find
Approx 300 m NE of Middle Street Transit Center (<i>mauka</i>) Entrance Building	Folk, Crotty and Hammatt 1993	50-80-14-4525	Depths between 60 and 110 cmbs (Folk et al, 1993:35)	One cultural resource identified: a post-contact cultural layer containing three human burials, two of which were in coffins.
Pier 40 (approx. 700 m SW of project alignment)	Moore & Kennedy 1999	50-80-14-5581	Approx. 70 cm (Moore & Kennedy 1999:10)	Documentation of a single, in situ, flexed burial within naturally deposited alluvial sediments. It was determined that the burial was of post-contact origin (pre-WWI) and most likely Hawaiian.
Palama Chevron Station (SW corner of N. King Street and Robello Lane) (approx 200 m NE of project alignment)	Dunn, Kalima, & Goodfellow 1991	50-80-14-3373	80 cmbs, 105 cmbs, and 120 cmbs (Dunn et al. 1991:1 and 4)	One cultural resource identified: a comingled scatter of very fragmentary human skeletal remains determined to be of post-contact origin due to the presence of associated

General Location	Reference	Site #	Depth	Nature of Find
				historic artifacts (MNI = 5 ?).
River-Nimitz re-development project – east corner of River St and Nimitz Hwy. (within 100 m of project infrastructure)	Landrum & Dixon 1992	50-80-14-4192.	“2.5 m beneath the surface” at water table; (Landrum and Dixon 1992:8 & 13)	Data recovery. Documented four post-contact trash pits, a brick and mortar building foundation, and a single pre-contact human burial.
Marin Tower property bounded by Maunakea, King, and Smith Streets and Nimitz Hwy. (the nearest burials appear to have been approx. 60 m NE of Nimitz Hwy.	Goodwin, Pietrusewsky, Douglas, & Ikehara-Quebral 1995	50-80-14-4494	Block I (9 burials): no profiles and no depths below surface given; Block II (6 burials and 13 “isolates”) Burials 5, 8, 13, 14 and 15, @ 2-10 cm below asphalt substrate (Goodwin et al. 1995: 42-50)	The entire Marin Tower property was designated SIHP # 50-80-14-4494. This 1995 study documents 15 post-contact burial features and the remains of 13 discoveries of “isolates” (displaced human skeletal remains), pre-contact fire pits, and early post-contact structural foundations associated with the residence of the Marin family from about 1810 to 1850. Numerous pre- and post-contact artifacts also documented.
Makai Parking Garage, corner of Punchbowl and Halekauwila Streets (TMK 2-1-31:23)	Clark 1987	-2963	Ft 10 @ 75 cmts. Other burial depths reported “below graded surface” (Clark 1987: 63-76)	Archaeological monitoring documented one cultural resource identified: SIHP - 2963, including 7 burials, probably dating to pre - 1850.
State Office Building Complex: Building # 2 (SE side of Punchbowl Street between Halekauwila and Queen Streets) (TMK 2-1-31:23);	Ota & Kam 1982	-2963	Recovered by mortuary – no depths available	Osteological Study, Makai Parking Garage, corner of Punchbowl and Halekauwila Streets (TMK 2-1-31:23); 6 partial burial sets (-2963) found. Tooth evulsion indicates probable pre-contact to 1850 date.

General Location	Reference	Site #	Depth	Nature of Find
South Street Building Complex, W corner South Street and Quinn Lane (TMK 2-1-031:020)	Avery & Kennedy 1993 and Addendum	-3712	Depths reported for 3 burials @ 110, 117, and 120 cmbs	Archaeological monitoring. One cultural resource identified: SIHP -3712 (Honuakaha Smallpox Cemetery); nine post-contact burials and an early 20th-century trash pit.
Queen Street Extension 70 m SE of Kamake'e Street (Kaka'ako Community Development District Improvement District 10) (approx. on project alignment)	O'Hare, Bush, & Hammatt 2006	50-80-14-6658; -6659; -6660.	@ 88 - 118 cmbs (inference from reported stratigraphy - O'Hare et al 2006 : 73, 76)	Monitoring for the Queen Street Extension Project. Three cultural resources documented: SIHP # 50-80-14-6658, a cluster of 28 burials; SIHP # 50-80-14-6659, two isolated burials; and SIHP # 50-80-14-6660, post-contact trash deposit. All known burials disinterred and relocated to the Queen Street Extension Reinterment site.
Queen Street east of Punchbowl Street (makai portion of former Kawaiaha'o Cemetery) 200 m mauka of project alignment	Pfeffer, Borthwick, & Hammatt 1993	-4534	Average depth of 120 cmbs with a range of 45 – 197 cmbs (Pfeffer et al. 1993:55 and Table 1)	Monitoring for Kaka'ako ID-1; 116 historic burials from Kawaiaha'o Cemetery (-534) at Queen Street (used from 1825-1920).
Juncture of Quinn Lane and South Street 50 m mauka of project alignment	Pfeffer, Borthwick, & Hammatt 1993	-3712; -	90 – 120 cmbs (incl. 30 cm road fill)	Monitoring for Kaka'ako ID-1; 31 burials from 1853-1854 Honuakaha Smallpox Cemetery (-3712) at Quinn Lane.
On Halekauwila Street 41.2 m 'Ewa of South Street – in close proximity to project alignment	Pfeffer, Borthwick, & Hammatt 1993	-4533; -	1 m	Monitoring for Kaka'ako ID-1; 1 probably pre-contact burial with 11 sling stones and other pre-Contact artifacts - removed to B.P. Bishop Museum.
Mauka side of Ala Moana W of Kamake'e Street and near Auahi and Kamake'e Streets	Souza et al. 2002	-6376; -6377; and -6378	120 cmbs	Monitoring. Three burials encountered: SIHP # 50-80-14-6376; SIHP # 50-80-14-6377; and SIHP #50-80-14-6378.

General Location	Reference	Site #	Depth	Nature of Find
Mauka/'Ewa corner of Halekauwila and Keawe Streets (Kaka'ako Improvement District 3 area) at the project alignment	Winieski & Hammatt 2000a	50-80-14-5820	Burial 1 was not observed in situ (no depth); Burial 2 was at 60 cmbs (Winieski & Hammatt 2000a: 28 and 30)	Twenty sets of human skeletal remains were encountered during archaeological monitoring at the Kaka'ako Improvement District 3 area (see also below). Two burials were identified at the mauka/'Ewa corner of Halekauwila and Keawe Streets: Keawe Street Burial 1 consisted of a skull and long bone fragments; Keawe Street Burial 2 was complete.
Mauka/DH Halekauwila Street (Kaka'ako Improvement District 3 area) at the project alignment	Winieski & Hammatt 2000a	50-80-14-5820	Burial 1 @ 115 cmbs (Winieski & Hammatt 2000a: 33)	Archaeological monitoring at the Kaka'ako Improvement District 3 area. Twenty sets of human skeletal remains were encountered (see also above), including one burial in the mauka/DH side of Halekauwila Street.
Pohulani Elderly Rental Housing makai side of Queen Street between Keawe and Coral Streets (Kaka'ako Improvement District 3 area) approx. 100 m mauka of the project alignment	Douglas 1991a, b and Winieski & Hammatt 2000a: addresses Pohulani Elderly Rental Housing Burials	50-80-14-4380	Burial 1 @ 130 cmbs; Burials 2 & 3 @ 140 cmbs; Burials 4, 5, 6, 7 and 9 @ 150 cmbs; Burial 8 @ 180 cmbs; (Winieski & Hammatt 2000a: 15-21)	Archaeological monitoring at the Kaka'ako Improvement District 3 area. Twenty sets of human skeletal remains were encountered (see also above), including nine burials within the area of Pohulani Elderly Rental Housing.
N. side of Mother Waldron Park very close to where Halekauwila Street passes mauka of the park (Kaka'ako Improvement District 3 area): at	Winieski & Hammatt 2000a (Douglas 1991a addresses Mother Waldron Park	50-80-14-5820	Burial 1 @ 125 cmbs; For Burial 2 no in-situ location was established; Burial 3 @ 110 cmbs;	Archaeological monitoring at the Kaka'ako Improvement District 3 area. Twenty sets of human skeletal remains were encountered (see also above), including four in and around Mother

General Location	Reference	Site #	Depth	Nature of Find
the project alignment	Burial 1)		Burial 4 @ 145 cmbs; (Winieski & Hammatt 2000a: 24-28)	Waldron Park.
Halekauwila Street at Coral Street. Burials mauka of Mother Waldron Park: at the project alignment	Winieski & Hammatt 2000a	50-80-14-5820	Burials 1 & 2 @ 140 cmbs; Burial 3 @ 120 cmbs; Burial 4 @ 130 cmbs; (Winieski & Hammatt 2000a: 31)	Archaeological monitoring at the Kaka'ako Improvement District 3 area. Twenty sets of human skeletal remains were encountered (see also above), including four in mauka Halekauwila Street: Burials 1 and 2 were highly scattered and fragmented. Burial 3 was heavily disturbed. Burial 4 was largely complete.
Victoria Ward Village Shops	Bell et al. 2006	-6854; 6855; -6856	Reported depths include: 75 cmbs, 110 cmbs, 108 cmbs	Archaeological inventory survey identified 3 cultural resources: SIHP 50-80-14-6854, subsurface cultural layer containing both historic and prehistoric cultural material and five human burials; SIHP 50-80-14-6855, pre-contact traditional Hawaiian cultural layer with six human burials; and SIHP 50-80-14-6856, historic fishpond remnant.
Kamake'e Street midway between Waimanu and Kawaiaha'o Streets (part of Kaka'ako Improvement District 4)	Winieski & Hammatt 2000b	-5598	90 cmbs (Winieski & Hammatt 2000b: 48 & 50)	Monitoring for construction; two isolated historic coffin burials (SIHP # 50-80-14-5598).
Ko'olani Phase 1 on makai side of Waimanu Street mid-block between Kamake'e and	Hammatt 2008	50-80-14-6910; -6911; -6912	# 1 @ 78 cmbs, # 2 @ 100 cmbs, # 3 to # 17	Monitoring. Three cultural resources identified: SIHP # 50-80-14-6910, a single pre-contact burial; SIHP # 50-80-14-6911, a cluster

General Location	Reference	Site #	Depth	Nature of Find
Pi'ikoi Streets (approx 150 m SE of project alignment)			depth reported as "unknown," # 18 @ 60 cmbs (Hammatt 2008: 49-81)	of 16 historic coffin burials; and SIHP # 50-80-14-6912, a single burial.
Just mauka of Kona Street 80 m east of Pi'ikoi Street (1341 Kapi'olani Ave.; TMK 2-3-039:019)	Smith 1989	50-80- 14- 4243	Not in situ (depth uncertain)	Inadvertent burial find consisting of one femoral fragment (SIHP # 50-80-14- 4243).